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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,524	03/29/2002	Toshio Ohi	Q69062	7307

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EXAMINER

VANOY, TIMOTHY C

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 07/21/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,524

Applicant(s)

OHI et al.

Examiner

VANOY

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

THE AMENDMENT FAXED ON JULY 14 2003.

- ☒ Responsive to communication(s) filed on _____
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-8 is/are pending in the application.
- Of the above claim(s) 6 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-5, 7 AND 8 is/are rejected.
- ☒ Claim(s) 1 is/are objected to.
- ☒ Claim(s) 1-8 are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☒ The drawing(s) filed on MAR. 29, 02 is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☒ Some* ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____
- ☐ Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: JAPAN 2000-234 230, 313 (PATENT APPLICATION)

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2
- ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

DETAILED ACTION

Lack of Unity of Invention

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

Group I, claims 1-5, drawn to a combustion exhaust gas treatment process.

Group II, claim 6, drawn to a combustion exhaust gas treatment apparatus.

The inventions listed as Groups I and II above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The "Y" references (i. e. JP 10-015,344 A; JP 6-142,447 A and JP 5-156,268 A) set forth in the search report for the parent application PCT/JP01/06554 are evidence that the "special technical feature" common to the inventions set forth in groups I and II do not define an unobvious contribution over the prior art. Therefore, there is a lack of unity of invention between the claims set forth in groups I and II: please see 37 CFR 1.475(a).

During a telephone conversation with Mr. Bruce Kramer, applicants' attorney, on July 9, 2003 a provisional election was made without traverse to prosecute the invention of the combustion exhaust gas treatment process, claims 1-5 (group I). Affirmation of this election must be made by the applicants in their reply to this Office action. Claim 6 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Acknowledgment is made of the applicants' claim for foreign priority based on JP 2000-230,313 filed on July 31, 2000. **It is noted, however, that the applicants have not filed a certified copy of JP 2000 230,313 as required by 35 U.S.C. 119(b).**

Drawings

- a) Figures 1 and 2 are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the reference sign "30", which is not mentioned in the description of figures 1 and 2 set forth on pg. 8 ln. 27 to pg. 11 ln. 8 in the applicants' specification.
- b) Figure 1 is objected to because it lacks directional arrows for the line connecting feature 34 to the line connecting features 2 and 3; an arrow for the line over feature 26;

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an arrow at the bottom right of feature 26, and an arrow at the bottom right of feature 21.

c) Figure 2 is objected to because it lacks directional arrows for the line connecting feature 34 to the line connecting features 2 and 3; an arrow for the line connecting features 31 and the line connecting features 2 and 3; and also an arrow for the line at the bottom of feature 26.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

a) In claim 1 line 9, "and" (1st occurrence) should be replaced with a comma.

b) In claim 1 line 9, the phrase "solution" should be replaced with "aqueous solution from the desulfurization step".

c) In claim 1 line 10, "and (1st occurrence)" should be replaced with "from the".

d) In claim 1 line 15, "to the pH adjusted filtrate" should be inserted between "agent" and "to"; "a solid portion" should be inserted between "precipitate" and "and"; the phrase "separate a" should be replaced with "separating the".

e) In claim 1 line 17, the phrase "separately provided" should be replaced with "separate".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as their invention.

a) Claims 7 and 8 are inherently inconsistent and confusing because they report an ammonia concentration for the waste water which has been *conducted to* the ammonia recovery step, and also for the waste water that has had ammonia recovered from it (i.e. waste water *discharged from* the ammonia recovery step). The claim language raises the question of which of these two waste waters is being referred to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. The Applicants are advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicants' discussion of the prior art process set forth on pgs. 1-3 and 6 in the applicants' specification in view of pg. 238 in Grant and Hackh's Chemical Dictionary (5th ed.).

The prior art process set forth on pgs. 1-3 in the applicants' specification describes what appears to be an obvious variation of the same claimed process for purifying the exhaust gas emitted from a thermal power boiler, comprising:

Removing nitrogen oxides out of the exhaust gas;

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Injecting ammonia into the exhaust gas so that the ammonia reacts with the sulfur dioxide and/or the sulfuric acid mist to form ammonium sulfate and ammonium hydrogen sulfate solids entrained in the exhaust gas;

Passing the exhaust gas through a dust separation device to filter the solids out of the exhaust gas;

Passing the exhaust gas through a desulfurization zone using calcium carbonate gas scrubbing agent, which generates a waste water containing ammonia, ammonium sulfate and ammonium hydrogen sulfate as well as calcium sulfate;

Filtering off the calcium sulfate-containing solids from the waste water;

Adding a pH adjusting agent (i. e. sodium hydroxide) to adjust the filtrate to pH 9 to 12 (please see pg. 6 lns. 28-30 in the applicants' specification) and also carbon dioxide or carbonic acid to the waste water;

Adding a coagulant to the waste water (evidently, for the same purpose of minimizing the amount of calcium solids precipitated in and clogging up the ammonia stripper), and filtering off the solids, and

Passing the supernatant liquid to an ammonia stripper, where ammonia is stripped from the supernatant liquid, as set forth in at least applicants' claims 1 and 2.

Additionally, note that the same prior art process is reasonably expected to submit the same ammonium sulfate compounds/dust to the same claimed water and heavy oil to separate the dust from the ammonium sulfate compounds, as set forth in applicants' claim 3, only to achieve the expected advantage of obtaining "dust-free" ammonium sulfate compounds.

The difference between the applicants' claims and the prior art process is that the applicants' claims call for the *additional step* of adding a flocculating agent to the waste water after the prior art step of adding the coagulant to the waste water.

Pg. 238 in Grant and Hackh's Chemical Dictionary defines flocculation as coagulation (thereby, rendering obvious that a flocculant is a coagulant).

It is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made, *namely* to add flocculant to the waste water after the prior art step of adding coagulant to the waste water, in the manner required by at least the applicants' independent claim, because the dictionary definition of "flocculation" renders obvious that a flocculant is in fact a coagulant and this step is tantamount only adding additional coagulant when the prior art process is deficient in the amount of coagulant added, but such supplemental addition of reagent (*when the original addition is insufficient*) is submitted to be prima facie obvious.

The concentration limitations of applicants' claims 4, 5, 7 and 8 are noted, but are submitted to be the same for corresponding liquids in the process resulting from the above modification of the prior art process, since the above modification of the prior art process arrives at the applicants' process.

The following references, which are indicative of the state of the art, are made of record.

JP 4-74,513 A disclosing a method for the removal of sulfurization and denitration of a gas using ammonia, and


JP 58-174,222 A disclosing a method for the purification of waste gas.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 703-308-2540. The examiner can normally be reached on 8 hr. days.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Timothy Vanoy/tv
July 16, 2003


Timothy Vanoy
Patent Examiner
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